Claims

- [c1] 1. An X-ray localizer light system comprising:
 a long life X-ray localizer light source;
 an optical concentrator, the light source being situated at a first focal spot, the optical concentrator being configured for concentrating X-ray localizer light from the light source to a second focal spot;
 an opaque shield having an aperture therein, the aperture being situated proximate to the second focal spot and being of such a geometrical shape so as to maximize light throughput while meeting light field edge contrast requirements of the X-ray localizer system.
- [c2] 2. The system of claim 1 wherein the light source comprises a halogen lamp.
- [c3] 3. The system of claim 2 wherein the halogen lamp comprises an axially positioned filament coil and wherein each dimension of the coil is smaller than a corresponding dimension of the aperture.
 - 4. The system of claim 3 wherein the filament coil is wound in a helix having a length and a diameter, and wherein the length of the helix is equal to or less than about twice the diameter of the helix.
- [c5] 5. The system of claim 1 wherein the light source comprises a light source having a rated life of at least about 1000 hours.
- [c6] 6. The system of claim 5 wherein the rated life is at least about 3000 hours.
- [c7] 7. The system of claim 1 wherein the light source comprises a light source capable of withstanding repetitive switching operation in an X-ray machine environment.
- [c8] 8. The system of claim 1 wherein the light source comprises a light source having substantially similar restart and operation voltages.
- [c9] 9. The system of claim 8 wherein the restart voltage is equal to or less than about 48 volts.
- [c10]
 10. The system of claim 8 wherein the restart voltage is equal to or less than

[c4]

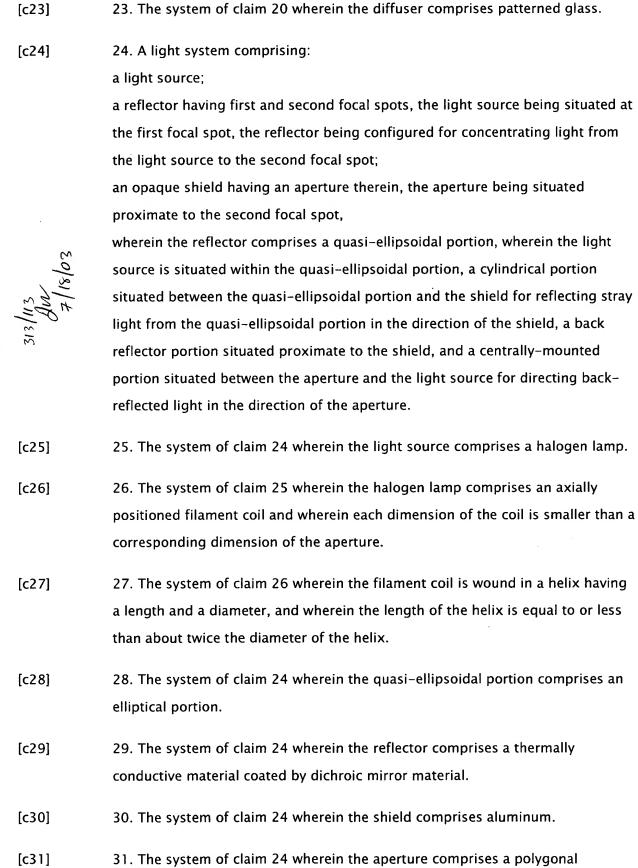
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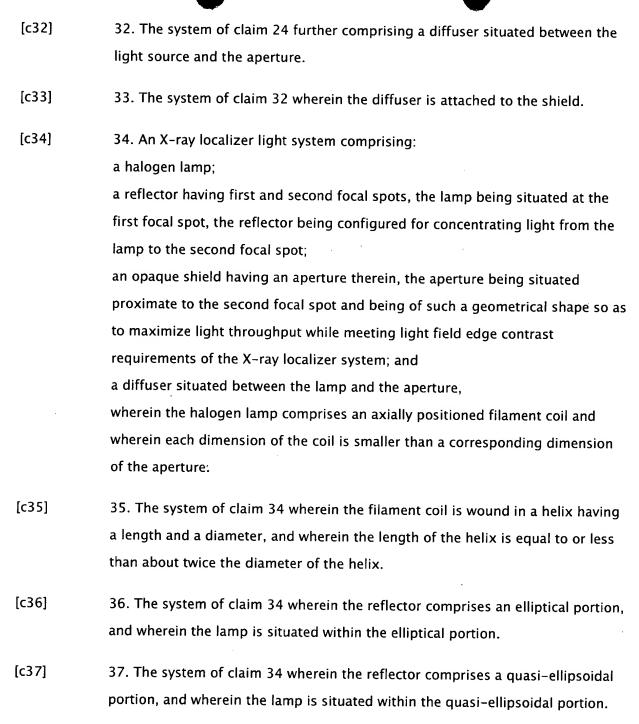
about 12 volts.

[c11]	11. The system of claim	I wherein the optical concentrator comprises a
	reflector.	

- [c12] 12. The system of claim 11 wherein the reflector comprises a quasi-ellipsoidal portion, and wherein the light source is situated within the quasi-ellipsoidal portion.
- [c13] 13. The system of claim 12 wherein the reflector further comprises a cylindrical portion situated between the quasi-ellipsoidal portion and the shield for reflecting stray light from the quasi-ellipsoidal portion in the direction of the shield, a back reflector portion situated proximate to the shield, and a centrally-mounted portion situated between the aperture and the light source for directing back-reflected light in the direction of the aperture.
- [c14] 14. The system of claim 11 wherein the quasi-ellipsoidal portion comprises an elliptical portion.
- [c15] 15. The system of claim 11 wherein the light source, the reflector, and the shield are configured to provide an efficiency of light from the light source to the aperture in a range of about 10 percent.
- [c16] 16. The system of claim 11 wherein the reflector comprises a thermally conductive material coated by dichroic mirror material.
- [c17] 17. The system of claim 1 wherein the shield comprises aluminum.
- [c18] 18. The system of claim 1 wherein the aperture comprises a square aperture.
- [c19] 19. The system of claim 1 wherein the aperture comprises a polygonal aperture.
- [c20] 20. The system of claim 1 further comprising a diffuser situated between the light source and the aperture.
- [c21] 21. The system of claim 20 wherein the diffuser is attached to the shield.
- [c22] 22. The system of claim 20 wherein the diffuser comprises foggy glass.

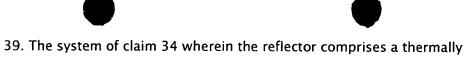


aperture.



[c38] 38. The system of claim 37 wherein the reflector further comprises a cylindrical portion situated between the quasi-ellipsoidal portion and the shield for reflecting stray light from the quasi-ellipsoidal portion in the direction of the shield, a back reflector portion situated proximate to the shield, and a centrally-mounted portion situated between the aperture and the light source for directing back-reflected light in the direction of the aperture.

[c39]



[c40] 40. The system of claim 34 wherein the diffuser is attached to the shield.

conductive material coated by dichroic mirror material.